

One to One at IS



A discussion document

Gareth Stevens April 2008

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A summary of key points

- Ubiquitous and constant access to a rich technological environment and connectivity is an entitlement not an option;
- The decision to implement a laptop scheme must be driven by a coherent, shared and detailed vision for teaching and learning;
- To be successful it must be supported by appropriate and ongoing professional development;
- Such a scheme supports, and interrelates with all our developmental priorities and is a key way of making our school's values concrete;
- Through access to a multitude of different kinds of resources, increased frequency of interaction with texts and the ability to use many online tools for scaffolding literacy, laptops are key to a pedagogical approach that is both inclusive and differentiated for different learner needs;
- A considered curricular approach to digital information literacy will have to be considered and will provide a focus for PD.

Key questions

- To what extent is our school community at large, primed and ready for such an initiative?
- What funding exists to develop our infrastructure to support such a venture?
- Which provider will offer us an appropriate support package that takes account of our setting, ongoing issues and professional development needs?
- At what rate and with which years do we phase a program in?
- Do we envisage working with one partner, or do we go with a 'mixed economy' model?
- Will the same device meet the needs of all our learners at every age?
- How will the environmental specifics of IS (including impending [?] redevelopment) affect the way in which we proceed?

It is not a case of if, but how and when!

"This program has allowed me to tear down the classroom walls and open the eyes of my students," Brigman says. "Besides having the world at their fingertips, they are also much more organized and communicative with me."

Dean Mantz , Director of Technology, Lyons Unified School District 405, Lyons, Kansas, USA.

"Today 1 to 1 computing initiatives that seek to provide laptop computers and Internet access to students for use at home and school are expanding rapidly across the globe. These initiatives can help facilitate the transition in schools from occasional, supplemental use of computers for instruction to more frequent, integral use of technology across a multitude of settings. Ubiquitous, 24/7 access makes it possible for students to access a wider array of resources to support their learning, to communicate with peers and their teachers, and to become fluent in their use of the technological tools of the 21st century workplace. Being able to take computers home further expands students' access, facilitates students keeping their work organized, and makes the computer a more "personal" device." Apple 1 to 1 research 2007

"Research shows that students with routine access to laptop computers score higher in writing assessments, demonstrate better analytical skills, collaborate more and have lower absenteeism and dropout rates. In Maine, for example, 33,000 seventh and eighth graders enrolled in a 1 to 1 program improved their scores in language arts, math, and science. Having used notebook computers all four years of high school, twelfth grade students scored higher than 85 percent of their peers in all five core subjects of the last Maine Educational Assessment." Apple Classrooms Of Tomorrow ACOT website

It is hard to imagine our students approaching any learning task without wanting or needing to use a computer. It is natural to them in a way that we will never fully understand. "Thanks to the internet students live, learn and play in a much more diverse and dynamic environment Their world has changed, with technology driving an intensely competitive economy unbounded by national borders or time zones." In this way it is reasonable to assert that a laptop or a similar device and connectivity are entitlements rather than merely an option.

Whilst I will argue below that the planning for implementation has to be driven by a vision for teaching and learning, I also think that a powerful way to view a 1:1 scheme is to understand how it will service and support ALL other areas of our development plan.

Without going into details, just consider how it might support our aims for –

- assessment, recording and reporting;
- tutoring for learning;
- improving school communications;
- independent learning;
- digital portfolios;
- parental consultations;

... and so the list goes on. This is not about the technology and is not a stand alone initiative.

1. Teaching and learning

1.1 Everyone I have spoken to who has been involved in the implementation of a laptop scheme at district or school level agrees, the vision for teaching and learning must be clear, visionary and in line with the needs of learners in the 21st century. More than that, it has to be the key driver for implementation rather than the technology itself. To see the laptop as the big lever is to miss the point, they say; the computer is just the tool and it is not merely a product that you 'plug in' to an existing or traditional approach to pedagogy. In schools where the whole community does not buy the complete vision, and where the values that drive teaching and learning do not drive the initiative, then teacher resistance can be high and the technology can be used merely to replicate existing approaches to teaching and learning.

1.2 It is easy to compartmentalise the various change initiatives that aim to move a school forward. If a 1to1 laptop program is going to make sense it is crucial to see it as working in tandem with our curriculum review work, our reflection on values and core competencies, the way we will seek to ensure progression and continuity from PYP and our development work on ARR and TfL. If we ask the right

questions it will be easy to see how one laptop, one student and anytime connectivity will nourish all these strands of school improvement work.

1.3 Four ‘deep’ ways in which ubiquitous access impacts on Teaching and Learning

In his “The Educators Manifesto,” Robbie McClintock (1) describes four main impact areas for teaching and learning.

Connecting to the world.

“Communications technologies have the potential to change schools and classrooms from isolated places with scarce access to information environments with rich connections to the world and all its ideas.”

Multiple representations of knowledge

“Multimedia and multiple representations of knowledge make it increasingly evident that the work of thinking can take place through many forms-verbal, visual, auditory, kinetic, and blends of all and each.”

Augmenting knowledge

Digital tools designed to “augment human intelligence-from digital calculators, word processors, databases and spreadsheets to very complex modeling, statistical, and graphical software-automate lower level intellectual skill, allow their users to concentrate on higher level thinking.”

Collaborative thinking.

Collaborative tools enable teams of students to participate in creating, editing, and revising documents collectively, thus enhancing the possibilities for group wisdom. As they create and collaborate, students find their voices as they are recognized collectively and individually.

1.4 Everything about a laptop scheme supports the central values that we hold dear at IS.

Value	Developmental strand	Vignette / Example of benefit
Inclusion	EAL and literacy across the curriculum	Students can highlight any text on a web site, select a feature within utilities and the computer ‘speaks’ the text in English. Students have access to countless on line resources in their first language
	SEN and differentiation.	Students can self differentiate by accessing resources / information at an appropriate level. CLC based resources can be provided within a range that supports a range of different ability levels. Students can evidence understanding in a range of ways using different applications in a variety of ways.
International understanding	Students have instant access to resources, perspectives and data on a worldwide basis. These resources are constantly updated and often primary.	
21 st Century skills	Competency based curriculum	Knowledge is now not the issue as information is available at a click; instead student progress is much more about capability, process skills and dispositions.
Independent	Students are motivated to extend their work, contextualise it within a global	

1 The Educators Manifesto,” Robbie McClintock, Institute of Learning Technologies, Columbia University

learning	landscape and develop lines of research which are individuated.
Anytime and anywhere learning	The constraints of classroom walls and the time slots of a timetabled day are diminished by a new virtual learning environment defined by their computer lead learners to extend and deepen their approach to project work.

1.5 Personalisation

Students have their own central and holistic learning resource. They can use it in a personal way, at any time they like and in ways that suit their learning style. Resources are infinite and students can self differentiate or be guided to sources that best suit their level, language background and/or learning preferences.

1.6 The competency based curriculum

Each student having his or her own computer with connectivity takes away from the teacher being the font of knowledge. Arguably knowledge, ideas and information would literally be at their fingertips. Surely this would push our pedagogy and curriculum to more being about skills and 'habits of mind'. As a learning community, we would be headed more to a situation where teaching and learning would be about co-construction, collaboration and the development of '21st century competencies or skills?

We do not need to look any further than Andy and Kevin's work on the new KS4 ICT course to see how their reflection soon led them to realize that what they needed to teach and assess were largely trans-disciplinary skills. But other examples abound; this example is from the Washington state education department website.

"Technology literacy is the ability to responsibly, creatively, and effectively use appropriate technology to:

- communicate;
- access, collect, manage, integrate, and evaluate information;
- solve problems and create solutions;
- build and share knowledge; and
- improve and enhance learning in all subject areas and experiences.

Technology fluency builds upon technology literacy and is demonstrated when students:

- apply technology to real-world experiences;
- adapt to changing technologies;
- modify current and create new technologies; and
- personalize technology to meet personal needs, interests, and learning styles.

It is interesting to note some findings from the 'Grunwald Report'⁽²⁾ namely that "Thirty-three percent of students were labeled as nonconformists by the study, yet they demonstrated a high level of 21st century skills, including communication, creativity, collaboration, and leadership skills, and technological proficiency. At the same time, they are more likely than other students to have lower grades.

This latter finding reminds us that student achievement may come in many forms and that current methods of assessing student achievement are too narrow in their focus, leaving talented students thinking otherwise." If this is valid data then it has implications not only for our debate on core skills, but in relation to the whole issue of inclusion.

1.7 Enquiry

Similarly such a programme would definitely support a more enquiry led model of teaching and learning.

1.8 Independent learning

² (Grunwald Associates, LLC, in cooperation with the National School Board Association. 'Creating & connecting: Research and guidelines on online social and educational networking.')

Evidence suggests that a laptop scheme can also develop learner autonomy. As it builds self-esteem, boosts engagement and motivation, it also spurs the learner on to take controlled risks, reflect and become more resilient.

1.9 Collaboration

Many professionals who have had experience of a laptop program claim that collaboration between students and teachers and students increase. Furthermore the incidence of peer assessment increases.

1.10 Student centred education

A laptop program can very much promote student centred education. Teaching as the 'sage on the stage' becomes a nonsense. Students begin to really take ownership of their learning and the role of the teacher becomes that of a facilitator. This paradigm shift is liberating to some and threatens others.

Jim Golubich from Shoreline said that laptops work well for those teachers who are willing to relinquish control to their students. He went on to claim that external exam pressures have slowed adoption for the teachers who are less confident that they will be able to cover content. These teachers have had to learn how to improvise with their curriculum as they accept the technology into their classrooms.

1.11 A Culture of Innovation and Creativity

Teachers will have to take risks with their teaching in the context of a laptop program. Students will have the tools to manifest learning outcomes in ways previously not open to them. Successful 1 to 1 will have to embrace the move to a more creative and imaginative approach to what we do.

1.12 Engagement

One of the standard, and oft reported, benefits of laptops for all is a leap in engagement levels. Students of all abilities and learning styles become more absorbed in their learning. This also has a demonstrable affect on work rate.

1.13 Student Voice

Just to say that when we advance with this initiative we should take every opportunity to listen to our learners so that we get it right. Like parents and teachers, students have to share our vision and are well placed to offer views and guidance.

1.14 Inclusion and differentiation

This issue has been discussed elsewhere in this document; suffice it to say that Howard Gardner as long ago as 1993 said '... the potential utility of computers in the process of matching individuals to modes of instruction is substantial...the computer can be a vital facilitator in the actual process of instruction, helping individuals to negotiate sequences at their preferred pace by using a variety of educational techniques...' (3)

The main issues to do with inclusion and differentiation can be summarised as follows:-

- Literacy is scaffolded by online tools
- Students are more likely to sequence and pace their learning in ways that support their needs.
- Peer support and increased opportunities for collaboration and communication mean all learners can progress.
- Students can evidence their understanding in a variety of ways; this can support a 'multiple intelligences' approach and thus aid differentiation.
- The varied language backgrounds of our students can be supported by access to first language sites.

- Constant access to a range of CLC based resources targeted at a range of ability and language background students can potentially extend our approaches to differentiation.

1.15 Literacy

'Laptops lead to more student writing and to writing of higher quality. In response to an open ended question, more than one-third of the surveyed teachers named writing as the academic outcome or skill that has been most directly affected by use of the laptops. Some teachers said simply that writing had generally improved; others said that students were doing more writing more often.'⁽⁴⁾

The scheme also increases the frequency and duration of times spent interacting with text and writing. Language acquisition is supported and enriched.

To argue the way in which laptops will demonstrably improve our ability to enhance the teaching of literacy (sited as a an area for development in most of last years departmental SSE reports) I include some quotes from “Laptops and Literacy” a paper by Mark Warschauer from the University of California Irvine 2006.

Reading

“Our study found that the introduction of one-to-one laptop programs greatly expanded teachers’ opportunities for scaffolding texts. The most common way that this occurred was by pointing students to textual and multimedia material from the Internet to help provide background or supplementary knowledge on topics of relation to reading. For example, a middle school teacher in California explained to us how she used the Internet to help open up students’ understanding of texts:

We read a short poem by Emily Dickinson [*I’m nobody! Who are you*] and they just weren't getting what she was saying in the poem and so we were able to do a quick little search online and they were able to see pictures of her and her dad. And they read about how she lost her father and how she sort of lived this strange life and then I think they grasped the poem.

Other frequent forms of computer-aided scaffolding included online dictionaries (allowing students to easily look up unfamiliar words), graphic organizers (allowing students to map out the plot, timeline, characterization, or other elements), and text-to speech programs (allowing students to hear unfamiliar words). Though less common, we also witnessed teachers using special programs(e.g., SoftChalk, 2005) to mark up online texts, providing pop-up annotations with supportive information or leading questions linked to individual words or phrases.”

Writing

Laptops were used extensively during each stage of the writing process. Pre-writing activities were assisted by the use of Internet searches (e.g., for background information) and graphic organizers (for planning). Drafting of papers was almost always done on computer, which caused less fatigue then writing by hand and offered additional benefits to students who had difficulties with coordination, motor skill, or cognitive function and thus had difficulty with handwriting.

As a special education teacher explained, For many of our students with cognitive disabilities, getting the ideas from your brain onto paper is pretty much a torture. But whatever reason, and the reasons are as different as the individual students are, word processing as opposed to writing has been an incredible tool in terms of creatively being able to express themselves and then also working on just the mechanics of written language...It levels the playing field sort of with their peers.”

Warschauer summarises seven ways in which laptop programs supported writing:-

1. Computer-based writing became more naturally integrated into instruction.
2. The writing process became more iterative, with students better able to receive and respond to feedback.

3. Writing became more public, visible, and collaborative, with students better able to view and work together on each other's writing, whether it was seen on a classmate's screen or printed out, than in the non-laptop classroom where work is written by hand. Most of the laptop classes we observed were print-rich, with numerous exemplars of student work posted around the room, often with multiple versions of the same paper.
4. Writing became more purposeful and authentic, with students better able to write things for real purposes (e.g. online book reviews, authentic correspondence, materials for publication).
5. Students took advantage of the formatting features of computers to write in multiple and diverse genres, producing, among other things, newspapers, informational brochures, pamphlets, business letters, and magazine advertisements.
6. By using computer-based language (e.g., spell checkers, thesauruses) and formatting tools, and by revising their work for authentic audiences, students tended to produce higher quality writing in which they took more pride.
7. By having a powerful writing tool available throughout the school day and at home, many students also became more autonomous in their writing, for example, by engaging more readily in creative writing in

Please see: Appendix 1: A table that shows the rich way in which laptops support Literacy.

1.16 Assessment for learning

On the study trip there was much discussion about how embedded use of 1 to 1 laptops afforded many more opportunities for the effective use of formative assessment in a range of ways and using varied media. Each laptop will provide the site at which self and peer assessment, written feedback, our formative reporting system and parental communications will feed into each other.

Please see Appendix 2: Impact on instruction in Shoreline Schools.

2. Digital Information Literacy and teaching

"Technology literacy is the ability to responsibly use appropriate technology to communicate, solve problems, and access, manage, integrate, evaluate, and create information to improve learning in all subject areas and to acquire lifelong knowledge and skills in the 21st century."

2.1 No one could argue that every student has a right to develop these kinds of skills and similarly we have a responsibility to teach them. With a laptop scheme we must be aware of the impact this will have on the way we plan our teaching across the curriculum. This issue becomes another PD requirement that we have to prepare for. Resisters and adopters alike, report that this becomes a concern and is viewed by many as an additional element to their workload. Which ever way you look at it, we need to consider and plan for this becoming an issue.

2.2 More than the skills of processing information, another skill area becomes the domain of every teacher involved in a laptop program; that is what is sometimes called multi-media literacy or media literacy. These phrases refer to the skills and awareness needed to produce high quality products that compare to those in the commercial world. Typically the incidence of students making films, web based designs, animations, podcasts etc rise dramatically in a laptop school. More than ever before it is not just the underpinning technical skills that will be deployed across subjects that will become the remit of classroom teachers; but also the ability to have awareness of media genre, styles and 'grammar' will become very important. In a sense everyone will become a teacher of media studies.

2.3 Generic ICT skills that students already have, in more cases than not, far outstrip those of the teacher. This gives rise to two issues. Teachers across the curriculum having to support the development of ICT skills for those who need help and at the same time, having to provide support to students whose ICT skills are far in advance of their teachers. Another key question for a later date is to ask what will be the role of our current discrete ICT courses within the context of a laptop scheme?

Please see Appendix 3: Digital Information Literacy

3. Computer rooms vs laptops for all

3.1 Having bookable computer rooms has served us for many years, but is now not enough. It is symptomatic of an outmoded way of viewing technology and pedagogy. Putting aside the issue that we just do not have enough of these resources, the idea that a whole class might want to use computers only at specific, pre-planned parts of units of work does not serve our need to make a student centred and personalized pedagogy systemic.

3.2 A middle school teacher in California talks about this issue –

“If you look at your week, and my day was Wednesday [for mobile laptop use], in that setting you throw everything out because I've got my iBooks here today. If you don't start and finish something, it's going to be another week before you get the iBooks. And you don't know what happens to those computers during the rest of the week. There were cases where kids dumped files. Maybe you had a student that didn't finish something. The next week they get that computer, and their stuff is gone. There were lots of mishaps when you only have the computer once a week. Here [with the one-to-one program], it's so much easier to use. They can write 15 minutes a day if you want, and continue writing at home. They can work on it a little bit any time and finish it later.”

3.3 Of course at IS we have addressed some of the issues discussed here. Students have pen drives to save work, they can email work to themselves or, better still, save it on google docs. The question is to what extent does every student having a laptop improve their ability to store and organize their work; what would be the effect of having continuity of access?

4. Stages of implementation and adoption

4.1 Apple describes the stages of implementation within a teaching and learning context as

Entry → Adoption → Adaptation → Appropriation → Innovation

By ensuring that implementation is carefully planned, the vision is clearly communicated and that the necessary professional development is on hand, schools can aim to progress through this continuum with pace and can miss some of the stages.

4.2 There are some additional tasks to address before the 1 to 1S learning program is implemented and laptops are distributed:

- A system and procedure for inventory and tracking
- Insurance and warranty against loss and damage
- Technical support for resolving hardware and software issues
- Imaging – the setup and installation of laptop settings, software and digital content
- Repair and re-imaging services
- Help desk services developed to support the new program
- Distribution of laptops

See appendix 3: Shoreline District, USA laptop scheme / Tiers of technology Integration Indicators

5 The importance of professional learning

5.1 Testimonials from professionals at a district level and from school leadership teams are quick to emphasise the importance of PD. Implementation without this will face huge problems for two main reasons. One is that the vision has to be shared. It is crucial for the whole school community (including parents) to understand and share the vision behind implementation. Teachers will only embrace this development if they understand why it is needed and how it will be achieved. Thus professional development, deep consultation and clear communication are required.

5.2 The second reason for concerted approach to PD is that without it, the laptop programme will operate as a weak adjunct to existing approaches to pedagogy. Teachers will use the technology to

serve an existing approach to learning and impact will be superficial. Apple use the term 'replication' to describe the way certain teachers use laptops, but essentially teach in the same way. Teachers need to see the productive use of these laptops modelled, through seeing case studies.

5.3 For some this will be a natural development. My trip showed that for some teachers, the roll out of a laptop scheme meant that they were set free to practice approaches to pedagogy that had not been open to them before. For others, however, it precipitated a feeling of being deskilled.

5.4 In one school appropriate induction had not been systematically made available to new teachers. In a year when the number of new staff had been high, the incidence of laptop use had fallen away and students were resisting bringing their computers in on unless specifically asked to do so, because they were not required to use them by some teachers.

5.5 The PD issue relates back to some points made in the section above on teaching and learning; whilst teachers do need to be aware of digital / information literacy issues and may need support in the use of hardware and software, the key PD that is most often needed centres on pedagogy and not computer use.

6 Some issues for 1:1 at Island School

6.1 AUP control and responsive policy change

With the advent of a laptop for every student scheme, the school's AUP becomes even more important. Not only do issues of enforcement become more pronounced, but the process of reviewing such a policy becomes crucial in ensuring ongoing effective, safe and secure use of technology. Balancing the need to manage safe and legal use of machines with the process of nurturing students responsible use will be of major concern.

Increased partnership work with parents on this issue is essential.

Another issue is the ambiguous notion of student ownership. Various representatives from laptop schools claim that there is a tension when laptops that are the property of the student are in some way controlled by the school and technology administrators. Some schools in this situation insist on providing the machine preinstalled with curriculum relevant software, reserve the right to control software and file downloads in order to affect network security. This is reported as an issue for parents at times.

Clearly the decision to either offer ownership and/or a leasing arrangement will have to be given due consideration.

6.2 Security

At RCHK every student has a well made and spacious locker. These are situated in the many communal spaces. These are protected from the elements and do not impinge on what is already a very spacious site. Students are able to store their laptops in these lockers when they attend PE and other subjects where laptop use is not essential. The lockers also provide security at social times when students may wish to be involved in more physical forms of recreation. This is a rather mundane, but very real issue for us at IS.

6.3 Balance and control

Some laptop schools report that students spend social time online and rates of physical activity decline at breaks and lunchtime as students would rather catch up on facebook.

This issue can extend to out of school hours as students have to manage distractions and often fail to balance online recreation with online learning. We will need to provide ongoing support to help staff, students, and parents make wise decisions regarding a healthy and appropriate balance of technology and non-technology activities, both in the classroom and at home.

At shoreline administrators adjusted the settings of the take-home laptops to shut down the browsers at a specific time in the evening. The issue then is do we educate students to act responsibly and healthily or do we take away this option and control technology use as much as we can?

Other issues include student compliance with AUP at school and home. Students need additional reinforcement of the terms of the laptop agreement and in proper care and handling of their laptops. Theft and damage – some students found ways to defraud the insurance companies in Shoreline; We will need to increase efforts to educate students and parents about Internet safety and other potentially negative aspects of modern technology.

6.4 Space

This connects with the issue of security in so far as we have to ask that if we decide to provide secure lockers for students, we then have to ask, where will they go?

The other issue is to do with the need to extend the helpdesk / technical support accommodation. Some of the schools I visited had huge spaces to house the necessary servers, laptops in for repair and re-imaging etc.

These issues aside, we also need to ask – are our classrooms physically big enough for laptops. Furthermore are there the necessary power points to service those students who may not have a fully charged machine?

For some time I had thought that the physical constraints at IS that affect our ability to move towards a systemic 21st century approach to pedagogy, were reason enough to hesitate about a laptop program. All the security, space and infrastructure issues mitigated so much against easy implementation.

Now I think the very fact that we are compromised to such an extent by our learning environment, gives us all the more reason to push forward. In short a laptop for each learner will be a quick way of sidestepping the shortcomings of our schools built environment.

6.5 The Naysayers

People instrumental in implementing laptop schemes seem to advise you to prepare for the 'naysayers'. You have to deal with them; they are loud and vociferous, but generally in the minority. The advice is to look beyond the complaints and struggles – don't ignore them, but don't let them stop you from moving forward.

7 The benefits of going with Apple

7.1 Apple Professional Development

Apple contest that any 1 to 1 program is only as good as the PD that supports it. The claim to offer flexible professional development offerings which are tailored to meet the needs of individual schools.

Apple Professional Development (APD) core values

- Based on 30 years of experience and research
- Aimed at student success and achievement
- Develops useful and relevant skills and understanding
- Builds faculty capacity and sustainability
- Provides hands-on learning tied to the curriculum

Their program of PD is designed by "teachers for teachers" and my experiences with them suggest that they have a deep understanding of the way technology can extend and deepen learning. They speak our language and seem committed to longitudinal partnership rather than just selling units.

As they themselves say – "You can expect APD instructors to have relevant experience and knowledge they will apply to enhance learning."

7.2 The seamlessness of 'iLife'

“Bring the sights and sounds that inspire students into the classroom with iLife '08 — Apple’s award-winning suite of digital authoring applications included on every new Mac. iLife '08 features the latest versions of iMovie, iPhoto, GarageBand, iWeb, and iDVD. With these powerful tools, students can easily create and share media-rich digital projects.

Teachers are using iLife to enliven lessons, meet instructional standards, and empower students with 21st century skills. Whether students are creating visual records of science experiments, historical documentaries, digital stories, or foreign language podcasts, with iLife, every subject comes to life.”

<http://www.apple.com/education/digitalauthoring/ilife.html>

At first I thought that the seamless and intuitive software suite somehow took away the opportunity for students to get to grips with opportunities for problem solving. It all looked too simple. I now think differently. It is the very fact that iLife is so intuitive, and the software interface potentially so transparent, that opens up increased chances for creative productivity, collaboration and expression. The technology can ‘disappear’ as can a real need to teach traditional ICT skills.

7.3 Apple learning Interchange

Basically this is to the implementation of an Apple laptop scheme as the OCC is to the IB diploma.

“The Apple Learning Interchange (ALI) is a social network for educators. Find a wealth of content ranging from simple lesson ideas to in-depth curriculum units for K-12 educators as well as a new channel for Higher Education faculty showcasing campus projects, research and more.

And viewing content is just the beginning. Create your free account and gain access to an environment for publishing and collaboration rich with movies, images and sounds.”

<http://edcommunity.apple.com/ali/>

8 Arguments against going with Apple

8.1 There are issues to do with Mac compatible software especially in Maths and D&T. Schools, and IS is no exception, have built curricular around software that may not run on apple OS. Countless resources exist both at department and individual teacher level that may become redundant if we move to apple. There is also the issue of the whole community moving over to the apple ‘way of doing things’ after years of using windows.

8.2 Apple would argue that they have selflessly dealt with this issue by developing ‘bootcamp’ which allows apple machines to run windows and leopard OS in parallel. I have seen D&T departments, for example, using this feature to continue to run Pro-Desktop three dimensional product design software.

8.3 Some would also argue that the ‘one size fits all’ solution is just not appropriate for us.

Appendix 1: A table that shows the rich way in which laptops support Literacy.

(From Laptops and Literacy by Mark Warschauer / University of California Irvine).

Typical Classroom	Lap top Classroom
Literacy Processes	
Mostly teacher controlled	More autonomous student control
Mostly private and individual	More often public and collaborative
Mostly for teacher and a grade	More often for an authentic purpose and audience
Limited revision	More iterative process with greater revision
Little feedback provided	More feedback provided
Some scaffolding	More scaffolding
Literacy Sources	
Use of few published sources (mostly from school libraries or textbooks)	Greater use of published sources, with library and textbook material supplemented by wide range of online material
Limited access to and use of data	Greater access to and use of data from online materials or collected by students in class (using computer-connected probes, etc.)
Limited ability to record and reflect on students' own experiences and prior work	Digitalized audio and video allow better opportunity to record and reflect on students' own experiences and prior work
Literacy Products	
Text products are mostly essays	Essays supplemented by other genres such as brochures, newspapers, and business letters
Multimedia products largely restricted to slide presentations (e.g., PowerPoint)	Greater diversity of multimedia products, including musical composition, videos, animation, and Websites

Appendix 2: Impact on instruction in Shoreline Schools.

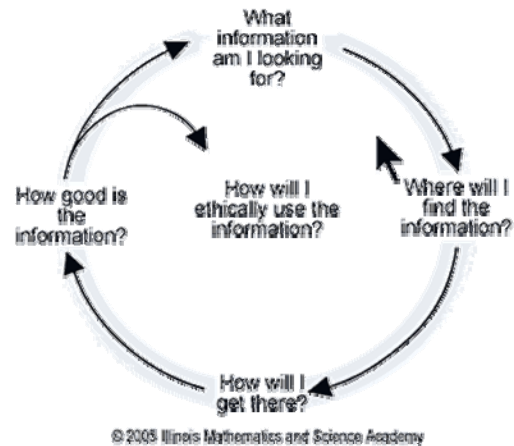
“The experiences at Kellogg and Echo Lake were very encouraging with respect to the potential instructional benefits of laptop access for all students. Here is a partial list of what we’ve seen as direct improvements in the instructional landscape:

- Accessing up-to-the-minute information online and also accessing multiple perspectives of the same topic/concept.
- Teachers – using a LCD projector and their laptops – can now bring rich and dynamic teaching content to any class presentation rather than being limited, to chalk, overhead projectors, and photocopied handouts. Concepts and procedures can now be presented via audio/video, animations, interactive exploration tools & simulations, and rich graphical representations – all of which enable students additional opportunities to see, hear, manipulate, and ultimately come to understand new and/or complex learning topics.
- The same principles as in #2 apply to what students can do on their own laptops, since they will now have access to most of the same resources as their teachers. More – and more authentic (real-world) – opportunities for students to create products demonstrating what they know. In addition to pencil and paper, they can now combine digital images, audio files, video, 2D and 3D graphs, charts, and so on in a variety of projects – all of which are conducive to revision and refinement throughout the learning process.
- Increased communication options within and beyond the classroom walls: electronic file sharing, weblogs (blog), web authoring, message/discussion boards involving teachers and students near and far.
- Digital tools for organizing their school work and assignments – calendar and “to do” programs (w/ reminder alarms!), backup server space to archive work, submitting work via teacher drop folders immediately upon finishing an assignment, and teacher web sites for 24/7 access to class news, assignments, and documents.
- Increased assessment options: audio comments attached to documents, electronic posting of grades (for benefit of students and parents, integrated software that tracks and reports student progress, more frequent revisions based on teacher input).
- The increase in resources and tools available through technology vastly increases the ability of teachers to make educational accommodations for students with specific learning needs, including extra practice or extra challenge, hands-on interaction, visual/auditory input, small group work, etc.
- Technology can now be an integral element in the entire educational experience of students. Assignments begun in school can easily be continued at home with no extra steps of moving files, converting formats, or working around incompatible software types. The use of technology during the school day is no longer constrained by a lab schedule or the availability of whatever computers might be in the classroom.

Appendix 3: Digital Information Literacy

This issue links to our Academic Honesty Policy and to the need to reference sources accurately using agreed conventions, but it is much more than this. It is currently a key skill at IS, but the way we address it is not fully matured or understood across the curriculum. The model and accompanying notes (below) have been taken from the “21st Century Information Fluency Project” set up by IMSA (Illinois Mathematics and Science Academy).

Digital Information Fluency Model



What information am I looking for?

Learners identify key concepts in a research question.

Learners create effective and efficient search queries

- Translate a natural language question into a search query.
- Develop and apply vocabulary building strategies to effectively conduct a digital information search.
- Effectively act on informed decisions to revise their search queries based on search results/feedback.

Where will I find the information?

Learners understand the organization of digital information.

Learners effectively and efficiently select digital collections based on their characteristics.

- Select visible Web collections (and sub-collections) based on their characteristics.
- Select invisible Web collections (and sub-collections) based on their characteristics.
- Select other digital collections (and sub-collections) based on their characteristics

How will I get there?

Learners select digital search tools based on their effectiveness and efficiency.

- Select features of a variety of digital tools based on the probability of effectiveness and efficiency.

Learners select appropriate search strategies to effectively and efficiently locate reliable digital information related to their academic learning goal(s).

- Navigate hyperlink, i.e. browsing strategies.
- Use subject directory strategies.
- Use search engine strategies

Learners apply appropriate search strategies in order to efficiently locate reliable digital information related to their academic learning goal(s).

- Navigate hyperlink, i.e. browsing strategies.
- Use a directory (subject index).
- Use a search engine.

How good is the information?

Learners evaluate the quality of a search result to determine its usefulness in the search process.

- Determine whether or not the digital information addresses the natural language question.
- Decide whether or not the digital information suggests revisions to search queries (revision decision).

Learners evaluate the quality of a search result to determine the reliability of its content.

- Investigate internal content reliability.
- Investigate external validation of information.

Learners evaluate the quality of a search result to determine the reliability of its source.

- Investigate author/publisher reliability.
- Investigate external validation of author/publisher

How will I ethically use the information?

Learners ethically use digital information.

- Learners decide whether or not to integrate digital information related to a specific information task.
- Learners give credit to the source and/or author for the selected digital information.

Overall competencies (Applicable in all phases of the digital information fluency process):

Learners acquire the dispositions necessary for successful digital information fluency:

- Demonstrate confidence in finding a solution when engaged in the digital information fluency process.
- Demonstrate persistence to continually engage in the digital information fluency process
 - o Demonstrate focus to avoid distractions when engaged in the digital information fluency process.
- Demonstrate open-mindedness to a variety of strategies and tools when engaged in the digital information fluency process.
- Demonstrate curiosity for exploring ideas when engaged in the digital information fluency process

Learners acquire self-regulation necessary for successful digital information fluency:

- Demonstrate meta-cognitive thinking to adjust their strategies and tools when engaged in the digital information fluency process.
- Demonstrate attitude of adaptability to respond to inconclusive or ineffective results when engaged in the digital information fluency process.

Appendix 4: Shoreline District, USA laptop scheme / Tiers of Technology Integration Indicators

	Tier 1: Teacher Focus on Productivity	Tier 2: Instructional Presentation and Student Productivity	Tier 3: Powerful Student-Centred 21st Century Learning Environment
	This tier focuses on the teacher using technology to get their job done.	This tier involves teacher facilitation of large group learning activities and student productivity use of technology.	This tier promotes students to be actively engaged in using technology in individual and collaborative learning activities.
Observable Indicators	<p>Teachers:</p> <ul style="list-style-type: none"> • Locate standards using electronic tools to align lessons (e.g., use the online Grade-Level Resources site and locate EALRs/GLEs on OSPI website) • Find instructional resources on the Internet (e.g., find lesson resources at Marco Polo, district, or state websites) • Produce, store, and retrieve learning materials electronically (e.g., create lesson plans in Word and store them on file server, create and print handouts for students that can be saved and modified in future years) • Keep/organize student information, grades more effectively (e.g., use electronic grade book, extract achievement data from student information system, graph student progress using Excel) • Communicate information to parents and students via web or e-mail (e.g., post upcoming events or assignments on school webpage) • Communicate quickly with e-mail (e.g., respond to e-mail from parents, learn about school meetings and events via internal e-mail) 	<p>Teachers:</p> <ul style="list-style-type: none"> • Conduct one-computer classroom lessons (e.g., use software such as Decisions, Decisions and Timeliner by Tom Snyder, lead virtual field trips to museums using K-20 Network) • Deliver presentations with graphics and sound (e.g., teachers use software such as PowerPoint, Keynote, or audio production software) • Lead students in brainstorming and sharing ideas (e.g., teachers use word processing programs or software such as Inspiration, use Intel Visual Ranking website) • Represent information visually (e.g., teachers create graphs in Excel or with a graphing calculator to visually represent chemical interactions) • Facilitate group discussions and lessons (e.g., teachers use interactive whiteboards, LCD projectors, student response systems) • Have students write papers and reports on assigned topics using computers or "smart keyboards" such as AlphaSmarts (e.g., require that all student papers must be word-processed) • Create scaffolding for student projects (e.g., teachers provide students with writing prompts or project templates) • Facilitate students using technology for assessment (e.g., teachers use online quizzes or diagnostic tools, graph and analyze progress with class using Excel) • Interactively communicate with parents and students (e.g., teachers initiate and respond to e-mail, conduct on-line surveys, interact through website) 	<p>Teachers enable students to:</p> <ul style="list-style-type: none"> • Create and use online resources to facilitate inquiry (e.g., students create and use online resources such as WebQuests) • Engage in inquiry-based projects driven by essential questions (e.g., students create major research projects such as Big 6 essential question projects) • Direct their own use of technology (e.g., students stay current with new information through tools such as RSS feeds) • Research, analyze data and problem-solve in a global context (e.g., student engage in projects such as ThinkQuest with classrooms in other states or countries) • Engage in individual or collaborative project-based learning (e.g., students engage in real-world projects and problem-solving using email or websites) • Use modeling and simulations (e.g., students conduct simulations using online resources) • Write, develop and publish individual and collaborative products (e.g., students publish projects online to be reviewed by parents or peers) • Invent products through programming or production (e.g., students produce how-to videos or movies to share with others) • Create scaffolding for their own projects (e.g., students create writing prompts or project templates) • Are involved with their parents and teachers in the analysis of student data and meeting standards, or participate in developing their own learning plans (e.g., students use classroom-based assessments and assess their own work) • Initiate communication with parents, teachers, community members, or other students (e.g., students display self-directed communication through tools such as weblogs)

Appendix 5: An extract from a forum on www.schoolhistory.co.uk by teacher Richard Smith, is an extremely well written piece which gives a good insight into the transformational effect of 1 to 1 laptops in the history classroom.

<http://www.schoolhistory.co.uk/forum/index.php?showtopic=1387>

"The laptop on its own does nothing but facilitate; it is the resources (software, websites etc) that the students are able to access and process that make the difference. At the moment a student relies on those things physically in the classroom with them at that time: a teacher, textbook, and other students. With a laptop, students have access to other teachers, other students, and a choice of different resources all available at times not constrained by classroom bells. Our recent experiments in the [Student Forum](#) suggest some interesting future possibilities for this type of learning. Access to web resources that teach through empathetic simulation and decision-making I find particularly valuable. My current favourite is [this](#) BBC simulation of an archaeological excavation. In addition, a laptop can help 'scaffold' student learning by helping them overcome difficulty with lower order skills and the tyranny of the blank page, allowing them to concentrate on the historical skills that matter. In this I have been impressed by the electronic writing frames used by Andrew Field and others (see [Nazi Germany](#) example), that allow students to produce well-ordered notes or essay plans in manageable steps. For the brightest, a hypertext curriculum will always offer extension activities and links to pursue something that may have caught the student's interest. (See my [Year 9](#) or [GCSE](#) examples)

But what has impressed me most over the last few years is how the laptops can be used as multimedia portfolios for the students as producers. This is where the advantage of the laptop over the exercise book becomes clear. An exercise book of handwritten words is a (closed) written dialogue between teacher and pupil. A student who expresses their learning through a website or multimedia presentation is no longer necessarily bound by the limitations of their linguistic intelligence and is engaged in an open dialogue with anyone in the world who cares to listen. In addition, apart from memories that soon fade, what record of their learning does a student in a traditional classroom take away with them at the end of the year? A laptop allows the student to record in a transferable format, evidence of a wide range of different learning successes; this means pretty much anything that can be produced electronically or captured on [digital still/video](#) camera: board games, role plays, speeches, debates, re-enactments, simulations, class teaching, movies or of course, [websites](#) etc.

Let me use just one example to illustrate my point. Since I started teaching in the early 90s, I have done a Nazi propaganda activity with my Y10 GCSE class. It started with students in groups producing scenarios, posters and dialogue etc. for the movie that they would then try to persuade Goebbels to fund. Last year I resurrected the activity in a laptop classroom with the students producing promotional websites. The difference in quality and student motivation was marked. Students were able to use digital video editing to actually make a scene from the film and integrate it within the website. Most interesting of all, the students who achieved the commendation awards from their peers were not my A* students. Careful editing of digital images, acting, web design and artwork are not the preserve of traditionally strong history students, but they can be used to express good historical understanding. (see work [here](#))

There is one final important characteristic about a laptop classroom. Unlike the exercise book classroom, a laptop classroom resembles the multimedia 'real world' our students inhabit and will be employed by when they leave school. There is a very apt quotation in a John Simkin's [article](#), taken from Dale Spender's book *Nattering on the Net: Women, Power and Cyberspace*, that highlights what is now the central problem of the traditional exercise book classroom:

'It's a teaching/learning model that is out of synch with the rest of the world. Many of today's students can tell you in no uncertain terms just how "unreal" (and boring, and silly) the educational context is. Traditional educational theory, practice and organisation are each day becoming more irrelevant and unworkable: just as the scribal model became obsolete after print was invented.'

Richard Jones-Nerzic
[International School of Toulouse](#), June 18, 2003